CLAIMS

What is claimed is

1. A foldable Pilates exercise apparatus comprising:

a generally rectangular frame

having a head end,

a foot end,

a hinged left side rail having a head section and a foot section, so that its head and foot section may be folded to an upright position, and

a hinged right side rail, parallel to the left side rail, the right side rail having a head section and a foot section, so that its head and foot section may be folded to an upright position;

a movable carriage mounted on the frame, such that the carriage may be moved along the left rail and right rail between the head and foot ends, the carriage having a generally flat upper surface;

a counterbalance mechanism, such that the counterbalance mechanism provides assistance in folding the apparatus, and provides resistance when unfolding the apparatus; and

at least one carriage spring member having a first end detachably connected to the carriage and a second end detachably connected in proximity to the foot end of the frame.

2. The exercise apparatus of claim 1 wherein the counterbalance mechanism comprises

a shaft;

at least one torsion spring positioned on the shaft, the spring having a first end and a second end;

a first spring stop means integral to the frame; and

a second stop means integral to the shaft, such that when the exercise apparatus is unfolded, the first spring stop means restricts the first end of the spring from moving relative to the frame, and the second stop means restricts the second end from moving relative to the shaft, thus providing a spring force to resist the unfolding and to assist in folding the apparatus.

3. The exercise apparatus of claim 1 further comprising

a head base, such that the head base supports the head end of the frame; and

a frame locking mechanism which prevents at least one of the left side rail head section and the right side rail head section from pivoting with respect to the head end base.

4. The exercise apparatus of claim 3 wherein the frame locking mechanism further comprises

a frame locking shaft;

a first conical male member on the frame locking shaft;

a first conical female member on the frame; and

an engagement and disengagement means to secure the male conical member into the female conical member.

5. The exercise apparatus of claim 4 wherein the engagement and disengagement means further comprises

a bracket positioned on the head end base assembly, the bracket having a threaded internal portion;

a threaded section on the frame locking shaft, such that

the threaded section on the frame locking shaft may be threaded into the threaded internal portion of the bracket, thereby forcing the first conical male member on the frame locking shaft into the first conical female member on the frame, and

the threaded section on the frame locking shaft may be unthreaded from the threaded internal portion of the bracket, thereby releasing the first conical male member on the frame locking shaft from the first conical female member on the frame; and

at least one knob mounted on the frame locking shaft, such that

the knob can be turned in a first direction to thread the threaded section on the frame locking shaft into the threaded internal portion of the bracket, and

the knob can be turned in a second direction to unthread the threaded section on the frame locking shaft into the threaded internal portion of the bracket.

6. The exercise apparatus of claim 1 further comprising a carriage position adjustment mechanism.

7. The exercise apparatus of claim 1 wherein the carriage position adjustment mechanism further comprises an axial alignment means.

8. The exercise apparatus of claim 6, wherein the carriage position adjustment mechanism is a single operation mechanism further comprising

a carriage spring anchor bar having a first end in proximity to the left rail and a second end in proximity to the right rail, such that the second end of the spring member may be attached to the spring anchor bar; and

a positioning element on at least one end of the carriage spring anchor bar, the positioning element including

a longitudinal positioning means having a locked state and a released state, such that the longitudinal positioning means permits the positioning element to be adjustably set at a desired location between the foot end and the head end of the apparatus, such that in the locked state, the longitudinal positioning means prevents the carriage spring anchor bar from moving relative to the foot end of the frame, and in the released state, the carriage spring anchor bar and the positioning element may be moved relative to the foot end of the frame, and

an axial alignment means, such that the axial alignment means keeps the spring anchor bar in a path approximately orthogonal to the side rails as the carriage spring anchor bar is moved from a first desired setting to a second desired setting.

9. The exercise apparatus of claim 8 wherein

positioning elements are integral to each end of the carriage spring anchor bar;

the longitudinal positioning means comprises

at least one locating pin on at least one positioning element, and

a plurality of locating slots fixed relative to the side rails, such that the locating pin may be inserted into a locating slot; and

the axial alignment means comprises

at least one guide pin on each positioning element, and

a guide slot fixed relative to each side rail, such that the guide pin may be inserted through the guide slot, such that

the positioning elements may be tilted in order to remove the locating pin from the locating slot without releasing the guide pin from the guide slot.

10. The exercise apparatus of claim 1 further comprising

a left pole located at the head end of the frame in proximity to the left side rail; and

a right pole located at the head end of the frame in proximity to the right side rail.

11. The exercise apparatus of claim 10 further comprising

a pole cap section having a first end attached to the top of the left pole, and a second end attached to the top of the right pole.

12. The exercise apparatus of claim 1 further comprising

a left pole located at the head end of the frame in proximity to the left side rail;

a right pole located at the head end of the frame in proximity to the right side rail;

a left pulley adjustably mounted on the left pole, such that the left pulley may be positioned at a desired height; and

a right pulley adjustably mounted on the right pole, such that the right pulley may be positioned at a desired height.

13. The exercise apparatus of claim 12 wherein

a left pole located at the head end of the frame in proximity to the left side rail;

a right pole located at the head end of the frame in proximity to the right side rail;

the left pulley is mounted on the left pole on a left pulley rotation mechanism, such that the left pulley may be rotated at least 90 degrees with respect to the frame; and

the right pulley is mounted on the right pole on a right pulley rotation mechanism such that the right pulley may be rotated at least 90 degrees with respect to the frame.

14. The exercise apparatus of claim 13 wherein

the left pulley may be rotated to a position approximately perpendicular to the left side rail, and moved into a position lower than the top of the left side rail; and

the right pulley may be rotated to a position approximately perpendicular to the right side rail, and moved into a position lower than the top of the right side rail.

15. The exercise apparatus of claim 13 wherein the left pulley rotation mechanism further comprises

a handle with a first end adjustably mounted on the left pole and a second end;

a socket in the second end of the handle;

a slot in the second end of the handle extending at least 90 degrees around the socket;

a pulley mount rotatably positioned in the socket;

a pulley mounting bolt assembly comprising

a bolt attached at a first end to a pulley bracket, and attached at a second end to the pulley mount through the slot in the second end of the handle,

a washer on the bolt between the slot and the pulley bracket, and

a spring on the bolt between the washer and the pulley bracket, such that the spring holds the pulley in a desired location, and such that the location may be changed by rotating the pulley bracket to a desired location such that the bolt passes through the slot extending around the socket.

16. The exercise apparatus of claim 1 further comprising

a foot end support which supports the left side rail foot section and the right side rail foot section;

a foot end cross brace having a first end attached to the left side rail foot section, and a second end attached to the right side rail foot section;

at least one wheel mounted in proximity to the foot end support; and

at least one wheel mounted in proximity to the foot end cross brace.

17. The exercise apparatus of claim 1 wherein the carriage further comprises

an upper section;

a lower section; and

a hinge attaching the upper section to the lower section, such that the upper section may be unfolded by pivoting the upper section on the hinge.

18. The exercise apparatus of claim 17 further comprising
a plurality of mats, such that the mats may be placed on the side rails after the upper section of the carriage is unfolded from the lower portion of the carriage.

19. The exercise apparatus of claim 1 further comprising
an adjustable footbar.

20. The exercise apparatus of claim 19 wherein the adjustable footbar further comprises
a U-shaped footbar comprising
a first leg pivotably mounted in proximity to the right side rail, and
a second leg pivotably mounted in proximity to the left side rail;
a pivotably mounted footbar support bar comprising
an H-shaped frame comprising
a right leg having a first end pivotably mounted to the first leg of the footbar, and a second hooked end,
a left leg having a first end pivotably mounted to the second leg of the footbar, and a second hooked end,
and a center member connecting the right leg to the left leg; and
at least one adjustment bracket having a plurality of pins, such that the hooked ends of the right leg and left leg may be positioned over a pin.

21. A method for storing and transporting a reformer exercise apparatus having a frame with a head end and a foot end, the frame including a first and second rail, each rail comprising a rail head section attached by a hinge to a rail foot section, the method comprising
folding the reformer frame from an extended lateral position to an upright folded position by
lifting a portion of the frame from a point near the center of a rail,
providing a counterbalance mechanism to reduce the required lifting force,
rolling, on wheels mounted on the foot end of the reformer, the first rail foot section and the second rail foot toward the head of the reformer,
pivoting the head sections of the first rail and the second rail on head rail section supports, and

continuing to roll the first rail foot sections and the second rail foot section toward the head of the reformer until the reformer is in a folded upright position;

securing the rails in their upright position; and

rolling the folded reformer to a desired position.

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